

PATENT SPECIFICATION

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(54) DEVICES FOR CONTROLLING THE RELATIVE QUANTITIES OF TWO PASTES ISSUING FROM A FLEXIBLE PACKAGING TUBE

(71) We, CLIN-MIDY, a French company, of 20 rue des Fosses St. Jacques, 75005 Paris, France, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to devices for controlling the relative quantities of two pastes issuing from a flexible packaging tube.

FR—PS 2,054,784 (Application filed 25th July 1969) discloses devices for controlling relative quantities of two pastes issuing from a flexible packaging tube, distinguished by the fact that the tube comprises two sections which can be moved relative to one another and which are arranged in such a way that, by rotating one of the two sections, the paste accommodated in an annular compartment in the packaging tube is progressively and controllably dispensed.

Figure 3 of the aforementioned French Patent Specification shows, in particular, a dispensing device for use with a flexible tube divided by an inner tube into central and peripheral spaces. The inner tube is fixed to the flexible tube whilst a movable member is movable relative to the inner tube. Output of paste accommodated in the peripheral space is regulated by rotating the movable member. As a result of this rotation, the movable member is vertically displaced, releasing a variable-opening passage through which the paste issues.

The present invention provides a device for dispensing pastes when pressure is applied to it, comprising a flexible packaging tube; an inner tube which defines a central space and a peripheral space included between the inner tube and the wall of the flexible tube; a neck portion of the inner tube extending externally of the flexible tube and terminating in a first cylindrical wall, the neck portion being fixed to the

neck of the flexible tube so as to close the peripheral space; an outer second cylindrical wall concentric with the inner first cylindrical wall and joined to the neck portion; at least one opening in the neck portion communicating between the peripheral space and the space between the cylindrical walls; a movable member rotatable about the longitudinal axis of the flexible tube and displaceable along the said axis; a collar of the movable member arranged between the cylindrical walls in such a way that the inner surface of the outer second cylindrical wall is always in contact with the outer surface of the collar and the outer surface of the inner first cylindrical wall is spaced from the inner surface of the collar; and a shoulder on the outer surface of the inner first cylindrical wall adapted to cooperate with an end of the collar to provide, in accordance with the displacement of the movable member, a variable passage between the said opening and the space between the collar and the inner first cylindrical wall.

This improvement in the device illustrated in Figure 3 of FR—PS 2,054,784 is important because it enables discharge of the paste accommodated in the peripheral space of the tube to be controlled more easily and more progressively.

In its preferred embodiments, the invention also includes the following modifications of the device illustrated in Figure 3 of FR—PS 2,054,784:

— the neck portion of the inner tube is not held on the neck of the flexible tube by a snap-on fit, but is screwed onto it by means of a screw thread formed on the neck portion. This screw thread can comprise a stop of any kind to prevent the flexible tube from being separated from the inner tube during subsequent manipulations;

— the neck portion of the inner tube has a dependent shroud with two outer screw

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threads, one of which is designed to receive a screw thread formed on the movable member, whilst the other is intended to cooperate with a screw thread formed on the inner surface of a cap covering the movable member and the adjacent end of the inner tube.

A preferred embodiment of a device according to the invention is described in the following and shown in section in Figure 1. The device already described in FR—PS 2,054,784 is shown in section in Figure 2 for comparison.

In Figure 2:

— the reference 1 denotes a flexible small-diameter packaging tube surmounted by a neck formed with a screw thread 2 onto which fits a movable member 6. A flexible tube of this kind is made for example of aluminium;

— the reference 3 denotes an inner tube, preferably made of a plastics material, which is snapped on by means of a bead 4 provided at the neck of the flexible tube. The inner tube defines a central space and a peripheral space included between the inner tube and the wall of the flexible tube. Paste is dispensed from both spaces by squeezing the flexible tube. The inner tube comprises openings 5 whose diameter and distribution are both governed by the maximum mass of paste to be extruded;

— the reference 6 denotes the movable member, preferably made of a plastics material, which is screwed onto the screw thread 2 and which, at its other end, is formed with another screw thread intended to receive the cap of the tube;

— adjustment of the output of paste is carried out by rotating 6 relative to 1 and vertical displacement of the wall 7 which uncovers the openings 5 to a greater or lesser extent, depending upon the degree of rotation as indicated by the pointer 8. A regularly variable quantity of paste is thus distributed from the peripheral space. The relative quantities of two pastes issuing from the central and peripheral spaces can thereby be controlled.

Figure 1 shows:

— an inner tube comprising a cylinder 1 which fits into a flexible tube (not shown) and which, once it has been introduced into this tube, defines a peripheral space into which one of the pastes is introduced; this cylinder is surmounted by a neck portion with a dependent shroud 2, which has an inner screw thread 3 and two outer screw threads 4 and 5. The inner screw thread is used for screwing the neck portion of the inner tube onto the neck of the flexible tube; at its end, this thread is provided with a stop which holds the inner tube on the neck of the flexible tube and prevents accidental unscrewing. An outer screw thread

4 cooperates with the screw thread 6 of a movable member 11; the other outer screw thread 5 is designed to cooperate with the screw thread of a stopper cap 7.

The neck portion of the inner tube is formed with openings 8 to allow through the paste accommodated in the peripheral space of the flexible tube. These openings are in a circular array at the bottom of a channel defined by two cylindrical walls 9 and 10.

In addition, the neck portion of the inner tube can comprise, for example, a pin 20 acting as a stop to prevent rotation of the movable member beyond a desired angle; this pin 20 can serve as an index for registering the position of the movable member relative to the inner tube.

The movable member 11 screws onto the outer thread 4 of the shroud and is provided with a central bore 12 whose diameter is slightly greater than the internal diameter 13 of the inner tube.

The movable member comprises a collar 14 whose outer surface 19 is always in contact with the inner surface of the outer cylindrical wall 9. The inner surface 16 of this collar is spaced from the outer surface of the inner cylindrical wall 10.

In the closed position, the end 17 of the collar covers the opening 8. When the movable member is vertically displaced by "unscrewing", the openings are progressively uncovered and the paste accommodated in the peripheral space is dispensed in increasing amounts. The base of the cylindrical wall 10 of the inner tube comprises a shoulder 18 of frustoconical form which enables the passage offered to the paste accommodated in the peripheral space of the tube to be more accurately regulated. It can be seen that, depending upon the inclination of this conical portion relative to the vertical, the passage offered to the paste accommodated in the peripheral space of the tube can vary to a greater or lesser extent for the same vertical displacement of the movable member. In alternative embodiments, this shoulder 18 can be convex or concave in shape, according to requirements. The shoulder 18 cooperates with the end of the collar 14 of the movable member 11 to provide in accordance with the displacement of the movable member, a variable passage between the openings 8 and the space between the collar and the inner cylindrical wall. It is thereby possible to control the amount of paste dispensed from the peripheral space, and hence the relative quantities of two pastes dispensed from the peripheral and central spaces respectively.

WHAT WE CLAIM IS:—

1. A device for dispensing pastes when pressure is applied to it, comprising a flex-

ible packaging tube; an inner tube which defines a central space and a peripheral space included between the inner tube and the wall of the flexible tube; a neck portion of the inner tube extending externally of the flexible tube and terminating in a first cylindrical wall, the neck portion being fixed to the neck of the flexible tube so as to close the peripheral space; an outer second cylindrical wall concentric with the inner first cylindrical wall and joined to the neck portion; at least one opening in the neck portion communicating between the peripheral space and the space between the cylindrical walls; a movable member rotatable about the longitudinal axis of the flexible tube and displaceable along the said axis; a collar of the movable member arranged between the cylindrical walls in such a way that the inner surface of the outer second cylindrical wall is always in contact with the outer surface of the collar and the outer surface of the inner first cylindrical wall is spaced from the inner surface of the collar; and a shoulder on the outer surface of the inner first cylindrical wall adapted to cooperate with an end of the collar to provide, in accordance with the displacement of the movable member, a variable passage between the said opening and the space between the collar and the inner first cylindrical wall.

2. A device as claimed in claim 1, wherein the neck portion is provided with a circular array of openings.

3. A device as claimed in claim 1 or 2, wherein the shoulder is of frustoconical form.

4. A device as claimed in any of claims 1 to 3, wherein the neck portion is fixed to the neck of the flexible tube by cooperating screw threads.

5. A device as claimed in any of claims 1 to 4, wherein the neck portion has a dependent shroud with two outer screw threads, one of which cooperates with a screw thread formed on the movable member and is used to displace the latter, whilst the other cooperates with a screw thread formed on the inner surface of a cap covering the movable member and the adjacent end of the inner tube.

6. A device as claimed in claim 1, substantially as herein described with reference to and as shown in Figure 1 of the accompanying drawings.

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1466721 COMPLETE SPECIFICATION

2 SHEETS

*This drawing is a reproduction of
the Original on a reduced scale
Sheet 1*

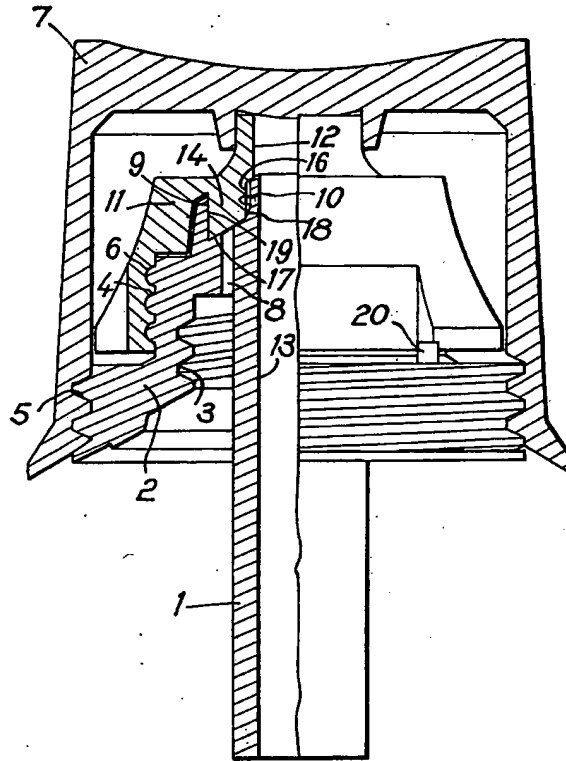


Fig 1

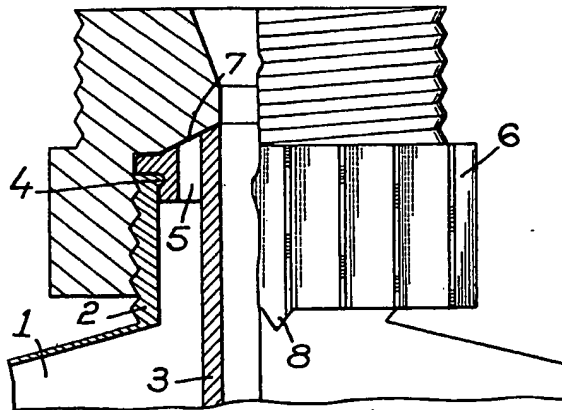


Fig. 2